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(54) Title: **TRANSISTOR-BASED BIOSENSORS HAVING GATE ELECTRODES COATED WITH RECEPTOR MOLECULES**

(57) **Abstract:** A device and method are presented for detecting analyte molecules in a medium. At least one FET (Field Effect Transistor) is provided being formed by at least one pair of source-drain electrodes and at least one gate electrode. The gate electrode is coated with a layer of receptor molecules that in the presence of said analytes catalyze a reaction that causes release of ions in a medium surrounding said receptor molecules. A monolayer of linker molecules is provided for linking said receptor molecules to said at least one gate such that a distance between the receptor molecules layer and the surface of the coated gate is smaller than 15Å. In the preferred embodiments, the receptor molecules are enzymes (e.g. acetylcholine esterase) or peptides, and the analyte molecules are pesticides, herbicides and chemical pollutants of industrial origin.